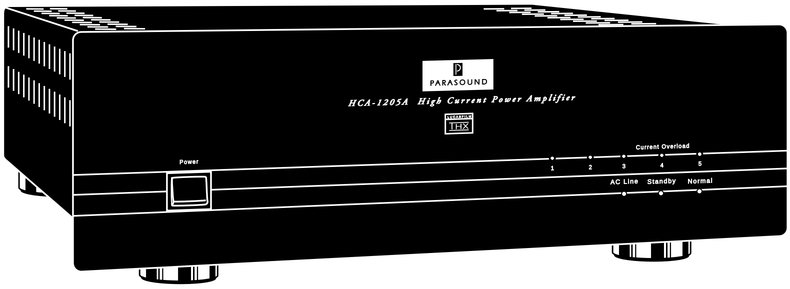
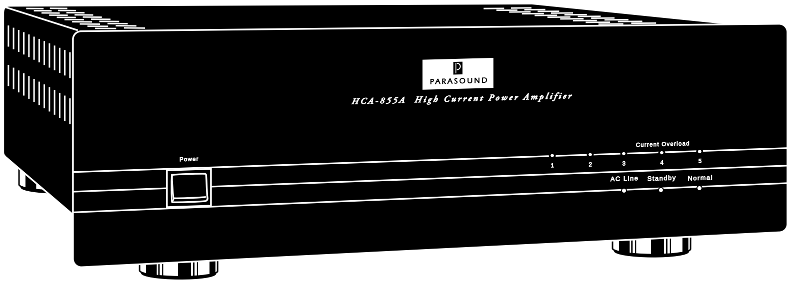
O W N E R ' S   M A N U A L

PARASOUND



HCA-1205A Five Channel High Current Power Amplifier



HCA-855A Five Channel High Current Power Amplifier

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Special Features for the Parasound HCA-1205A and HCA-855A

HCA-1205A Designed by John Curl
HCA-1205A THX certified by Lucasfilm Ltd.
Independent power supplies for each channel
1.6 kVA power transformer, 100,000 uF filter capacitance in the HCA-1205A
1 kVA power transformer, 68,000 uF filter capacitance in the HCA-855A
Modular circuit board layout
Massive toroid power transformer
Multiple polystyrene film bypass capacitors in power supply
Can be powered with external DC source
Cascode Class A input stages with matched J-FET pairs
Hand-picked complementary transistors in high voltage driver stage
15 ampere 50 MHz output transistors
Output transistors direct-coupled to speakers without LRC networks
DC servo direct-coupled audio circuits with 0.8 Hz rolloff
High-bias Class A/AB operation
Gold-plated metal structure RCA input jacks
Multiple protection circuits, temperature sensors and silver-cadmium relay protection
Glass epoxy circuit boards, double-sided for precision
Custom designed audiophile-grade AC power cord

The Parasound HCA-1205A is manufactured under license from Lucasfilm Ltd.
Lucasfilm and THX are trademarks of Lucasfilm Ltd.

IMPORTANT SAFETY INSTRUCTIONS

The lightning flash with the arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of “dangerous voltage” inside the product that may constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

1. **Read Instructions** — Read all the safety and operating instructions before operating this product.
2. **Retain Instructions** — Retain safety and operating instructions for future reference.
3. **Heed Warnings** — Adhere to all warnings on the product and in the operating instructions.
4. **Follow Instructions** — Follow all operating and use instructions.
5. **Cleaning —** Unplug this product from the wall outlet before cleaning. Use a damp cloth for cleaning. Clean the outside of the product only.
6. **Attachments —** Do not use attachments that are not recommended by the product manufacturer; they may be hazardous.
7. **Water and Moisture** — Do not use this product near water.
8. **Accessories —** Do not place this product on an unstable cart or stand. The product may fall causing bodily injury and damage to the product. A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart to overturn.
9. **Ventilation** — Slots and openings in the cabinet are provided for ventilation to ensure reliable operation of the product and to protect it from overheating. These openings must not be blocked or covered. *This product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided.*
10. **Power Sources —** Operate this product only from the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your dealer or local power company. This product is equipped with a three-prong grounding plug. This plug will only fit into a grounding power outlet. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding plug.
11. **Power Cord Protection** — Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them.
12. **Lightning**— Unplug the unit from the wall outlet for added protection during a lightning storm and when it is left unattended and unused for long periods of time. This will prevent damage to the product due to lightning and power line surges.
13. **Overloading** — Do not overload wall outlets or extension cords. This can result in a fire or electric shock.
14. **Inserting Objects into Unit** - Never push objects of any kind into this product through any openings; they may touch dangerous voltage points or short out parts that could result in fire or electric shock.
15. **Servicing —** Do not attempt to repair or service this product yourself. Opening or removing covers may expose you to dangerous voltage and other hazards. Refer all servicing to qualified service personnel.
16. **Damage Requiring Service** — Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions: a) If the power-supply cord or plug is damaged. b) If liquid has been spilled into the product. c) If the product has been exposed to rain or water. d) If the product does not operate normally by following the operating instructions. e) If the product has been dropped or damaged in any way. f) If the product exhibits a distinct change in performance.
17. **Replacement Parts** — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer. Unauthorized substitutions may result in fire, electric shock, and other hazards.
19. **Safety Check —** Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
20. **Wall or Ceiling Mounting —** Mount the product to a wall or ceiling only as recommended.
21. **Heat** — The product should be situated away from heat sources such as radiators, heat registers, stoves, and other products (including amplifiers) that produce heat.

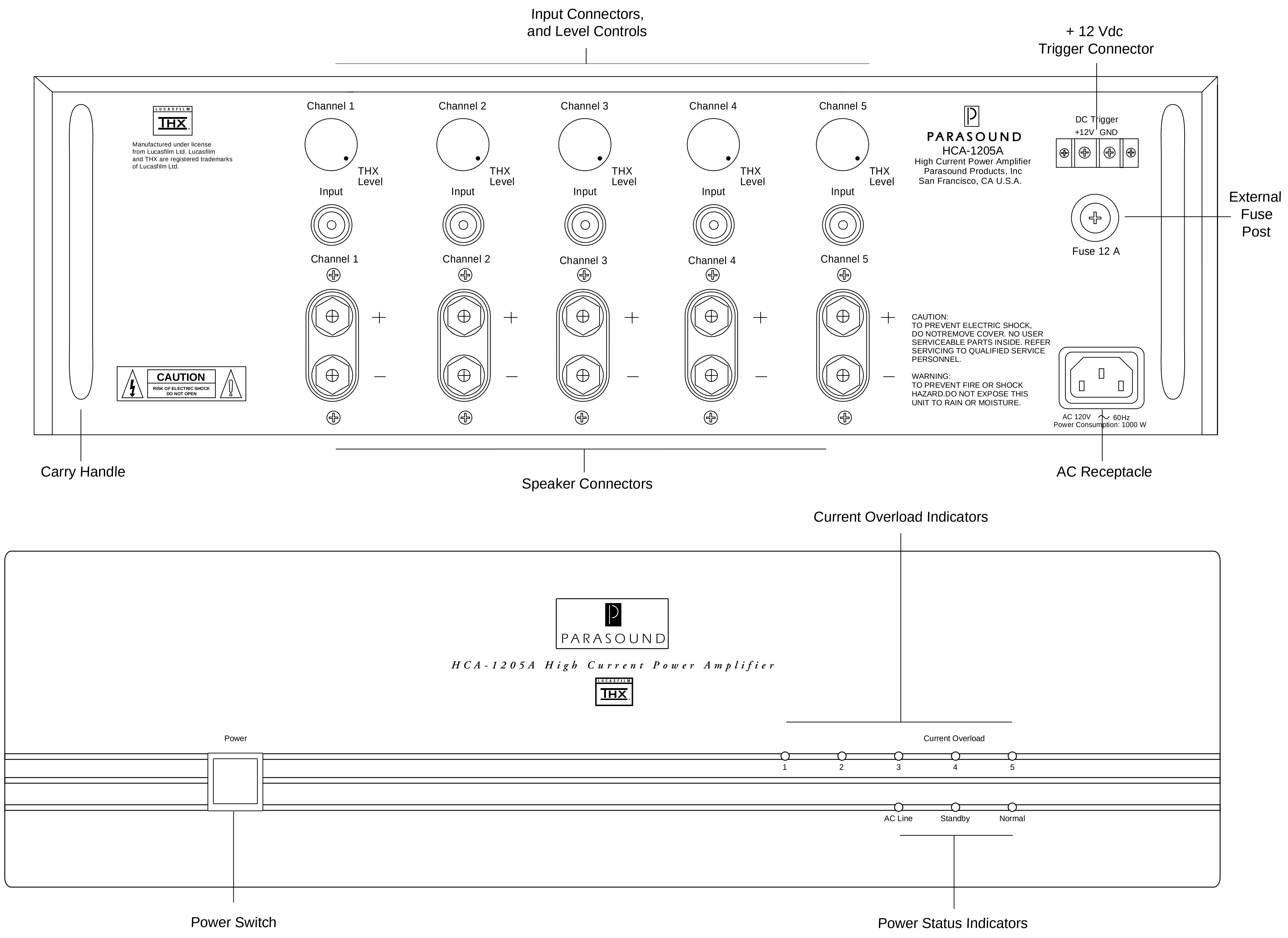


Figure #1 **HCA-1205A Front and Rear Panel Drawings**

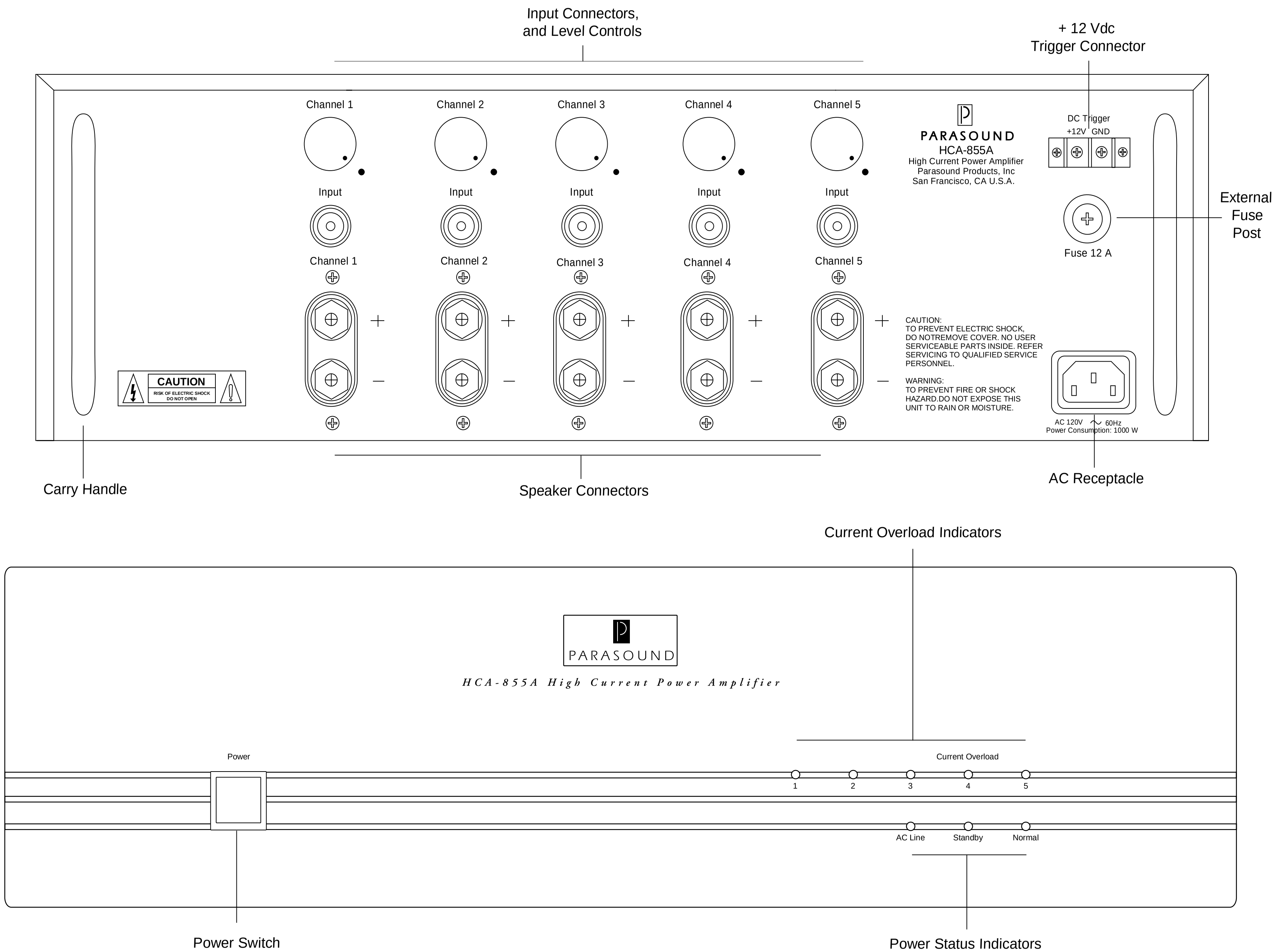


Figure #2 **HCA-855A Front and Rear Panel Drawings**

Introduction

Congratulations on your purchase of this precision audio component and thank you for your selection of Parasound. The Parasound HCA-1205A and HCA-855A five channel amplifiers are virtually identical in operation and sonic performance. However, the HCA-855A has slightly less power and is therefore not THX certified like the HCA-1205A. Please take a few moments to read these instructions so that you may fully understand the capabilities of your new Parasound power amplifier.

Unpacking Your Amplifier

Carefully unpack your amplifier and remove all the enclosed accessories. Be sure to inspect the unit for any possible shipping damage. If you see any, contact your Parasound Dealer immediately. Save all the packing material in case you need to ship the amplifier for repair. Before you proceed, find the serial number located on the rear panel of your amplifier and record it here for reference:

Serial #____________________ Date of Purchase____________________

Installing and Rack Mounting Your Amplifier

Place your amplifier away from heat sources such as air ducts and radiators. Always mount the amplifier horizontally and make sure that your cabinet or shelf can support its weight. It is best to provide a separate shelf for your amplifier rather that stacking it directly above or below other components.

With the use of the optional Parasound RMK-3, both the HCA-1205A and HCA-855A occupy three rack spaces (5 1/4") in a standard 19 inch equipment rack. Be sure to use the heavy duty mounting bolts with nylon shoulder washers on both sides of the faceplate to avoid scratching the amplifier's front panel and to help prevent ground loops. This mounting hardware is included with the RMK-3. When rack mounting equipment, have someone help support the unit while you bolt the component to the rack rails.

Ventilation Requirements for Your Amplifier

To insure safe and reliable operation, it is very important that the amplifier has *plenty of ventilation* to prevent overheating and automatic shut down from its thermal protection circuitry. Please observe the following ventilation guidelines when installing your amplifier in a cabinet or other enclosed area:

1) If you are not using a fan, allow *at least* six inches on each side and above the amplifier, and *do not* close off the front with a cabinet door or panel.
2) If you are enclosing the amplifier within an equipment cabinet, use a fan to draw in cool air and exhaust warm air. Two vent holes are required: one for intake and one for exhaust.
3) Do not place the amplifier on carpeting that will obstruct the air flow into the bottom of the amplifier chassis and heatsinks.
4) Avoid stacking components. If you do stack components, you *must* use a fan to circulate the warm air that will quickly become trapped between them when they are powered on.

Making Connections to Your Amplifier

Leave the AC cord disconnected while making any input or speaker connections. When making connections to the amplifier, make sure there is no strain or tension on the input leads, speaker wires, or AC cord that could cause them to pull loose.

Home Theater Configurations and Input Connections

Refer to Figure #1 or Figure #2

Your Parasound multi-channel amplifier is designed to deliver the same power and sonic characteristics to the Left, Center, Right, and both Surround speakers of your home theater system. For additional low frequency response, you should also install a powered subwoofer. Even though all the channels of your amplifier operate identically, we recommend the following configuration to make it easier to identify each channel in case you ever need to troubleshoot your system.

- Connect the right front output of your processor to INPUT 1 of your HCA-1205A or HCA-855A.
- Connect the left front output of your processor to INPUT 2 of your HCA-1205A or HCA-855A.
- Connect the center output of your processor to INPUT 3 of your HCA-1205A or HCA-855A.
- Connect the right surround output of your processor to INPUT 4 of your HCA-1205A or HCA-855A.
- Connect the left surround output of your processor to INPUT 5 of your HCA-1205A or HCA-855A.
- Connect the subwoofer output of your processor to the input of your powered sub or sub amplifier.

Speaker Connections

You can connect speaker cables to the amplifier's rear mounted 5-way binding posts using speaker wire terminated with 1/4" spade lugs or banana plugs. You can also insert bare wire up to AWG 12 into the holes on the sides of the binding posts. If you use bare wire, remove only about 1/2" of insulation and twist the wire's strands tightly to prevent strays that could cause a short circuit. (You may want to "tin" the stripped wire with solder to prevent it from fraying and oxidizing.)

Polarity

When you connect speakers to your amplifier, you will notice that one side of the two conductor speaker wire will have some sort of mark: either printing, a raised ridge on the insulation, or a different color of conductor. The marked insulation or copper colored wire usually indicates the positive conductor. This demarkation lets you know which wire is connected to the positive and which to the negative speaker terminals so you can do exactly the same on the power amplifier's colored (+) and black (-) binding posts.

Minimum Impedance Precautions

Connect loudspeakers with a 4 Ω or 8 Ω nominal impedance for normal operation. Both amplifiers are capable of driving speakers with occasional impedance dips below 2 Ω. However, sustained high power operation into loads of less than 4 Ω may cause overheating and is not recommended.

AC Power Connections and AC Grounding

Before you connect the AC cord, make sure your amplifier's power switch is in the off position and the external DC trigger is off. If possible, plug your amplifier directly to an AC wall outlet. Do not connect the amplifier to the accessory AC outlet on your preamplifier or processor because the amplifier's current draw will exceed the rating of most preamplifier’s power switches and power cords. If you use an external AC line conditioner or surge suppressor, make sure it can withstand the power requirements of the amplifier listed in the specification section of this manual.

DC Trigger Connection

The DC Trigger allows you to turn on your amplifier with external DC voltage sources from + 9 Vdc to +12 Vdc. Use a two-conductor wire such as an 18 AWG speaker wire to connect the DC trigger from an external source to your amplifier. You should first determine the + DC voltage and ground conductor from the external source. For example, the AVC-2500 has DC trigger that uses an 1/8" mini jack where the tip is positive and the ring is negative (ground). In this case, you would terminate one end with an 1/8" mini plug and strip off a 1/4" of insulation and use bare wire on the other end. Connect the positive lead to the screw labeled +12 V on the amplifier’s DC trigger connector and the negative (ground) lead to the screw labeled GND. With the main power switch in the off (down) position, the amplifier can now be turned on with the external DC source.

Operating Your HCA-1205A or HCA-855A

Power Switch

Manual Turn On

Press the upper side to turn the unit on manually; press the lower side to turn the unit off.

Automatic Turn On

When the power switch is in the off position, the power amplifier can be turned on with an external DC voltage applied at the DC trigger connector on the rear panel.

AC Line LED

The AC line LED on the front panel of your amplifier will illuminate whenever AC is present at the AC connector. This LED indicates that the AC cord is connected and that power is currently applied to the amplifier.

Standby/Normal Operation LEDs

The red Standby LED will light when the amplifier is turned on either with the power switch or an external DC trigger. It will stay lit about four to five seconds while the amplifier circuits stabilize. After that, the red LED will turn off and the green normal LED will signal that the protection relays have switched off and that amplifier is ready to operate. The Standby LED will also light whenever there is a short circuit or other fault that triggers the protection circuitry. This may indicate one of the following conditions: DC present at the amplifier's input, a speaker impedance overload, a short circuited speaker line, or possible internal fault. If this LED remains lit, remove power to the amplifier and check all connections. During this time, the protection circuits should automatically reset. If the red LED stays lit after you reapply power, contact your Parasound Dealer, Installer or Parasound Technical Service for further advice.

Current Overload LEDs

The Current Overload LEDs for each channel only illuminates if the unit is driven past its maximum current capacity. These LEDs are not clipping indicators, but are designed to signal when you are exceeding the limits of your amplifier. If these LEDs light, it’s usually a sign that your speaker impedance is too low, resulting in too much current draw from the amplifier's power supply. In most imaginable listening situations with recommended loads, these LEDs should not illuminate.

Level Controls

Each channel has its own rear mounted "set and forget" input level control. Your amplifier sounds best with these level controls set to maximum, where they are effectively out of the audio signal path. However, if your preamplifier has very high gain, and its volume control cannot track properly for left-right channel balance near its minimum position, it may be necessary to reduce the input level control settings on the amplifier. When using the HCA-1205A in a THX installation, each level control *must* be set at maximum to correspond to 0 dB THX reference level.

Maintaining Your Parasound Amplifier

Your Parasound power amplifier requires no periodic maintenance and has no user serviceable parts inside. To avoid the risk of electric shock, do not remove the top cover. The amplifier's exterior can easily be cleaned with a soft cloth moistened only with a few drops of water or glass cleaner.

Main Power Fuse

There is an external fuse located within the AC receptacle that may blow as a result of an internal fault condition. This fuse protects the unit from possible damage to internal parts. *Never replace this fuse with a fuse of higher value than installed from the factory*. Substitution of a larger fuse may create serious stress and damage to internal parts and *will void your warranty*.

In Case of Trouble

If you suspect a problem with your amplifier, first turn the amp off and check all your connections. The trouble may be caused by another component or even a defective hookup cable. If you are hearing hum out of any of your speakers, turn off the amplifier and disconnect the inputs to it. If the hum goes away, it was probably be caused by your processor or one of the source components connected to it.

Frequently, hum in home theater systems is caused by a grounding problem with the cable TV system. Contact your cable provider if necessary to make sure the cable feed into your house is properly grounded. There are cable isolation devices available such as the Video Link #634 or the Mondial Magic specifically designed to cure this problem. In rack mounted systems, ground loops and hum can sometimes develop via the metal rack rails of the equipment rack. This problem can be solved with nylon shoulder washers mentioned in the rack mounting section of this manual.

If All Else Fails...

Call your Parasound dealer or Parasound Technical Service. We can suggest other diagnostic tests you can easily perform. If we determine that your amplifier should be returned to Parasound or an Authorized Parasound Warranty Center for inspection and possible servicing, call Parasound for the location of a warranty center near you. If you choose to send it to Parasound, contact us to obtain a Return Authorization (RA) number. You will be asked to repack the unit in its original packaging including the additional outer box for protection during transit. The Return Authorization number must be clearly marked on the outer carton only. You should ship the unit by UPS with adequate insurance and a copy of your purchase receipt to validate your ownership. Units that arrive without your specific Return Authorization number, without a suitable shipping carton or with evidence of improper internal packing must be refused. We do not accept collect shipments. After repair under warranty, the unit will be returned to you via prepaid UPS. In the case of a non-warranty repair, contact us and we will advise you of the repair charges before you ship the unit to us. The same packing and RA number requirements apply.

Parasound HCA-1205A Specifications

Continuous Power Output
140 watts RMS x 5, 20 Hz-20 kHz, 8 Ω,
200 watts RMS x 5, 20 Hz-20 kHz, 4 Ω,

Current Capacity
45 amps peak per channel

Slew Rate
> 130 V/microsecond

Power Bandwidth
5 Hz-100 kHz, +0/-3 dB at 1 watt

Total Harmonic Distortion
< 0.03 % at full power; < 0.01 % typical levels

IM Distortion
< 0.03 %

TIM
Unmeasureable

Dynamic Headroom
> 1.5 dB

Interchannel Crosstalk
> 80 dB at 1 kHz
> 60 dB at 20 kHz

Input Impedance
33 kΩ

Input Sensitivity
1 V for 28.28 V; THX Reference Level; 1.2 V for full output

S/N Ratio
> 117 dB full power; > 96 dB THX reference level

Damping Factor
> 800 at 20 Hz

Dimensions
17" wide x 5 1/4" high x 19" deep (6" high with feet)

Power Requirements
110 Vac-120 Vac 1000 Watts

Net Weight
46 lb

Parasound HCA-855A Specifications

Continuous Power Output
85 watts RMS x 5, 20 Hz-20 kHz, 8 Ω
125 watts RMS x 5, 20 Hz-20 kHz, 4 Ω

Current Capacity
30 amps peak per channel

Slew Rate
> 130 V/microsecond

Power Bandwidth
5 Hz-100 kHz, +0/-3 dB at 1 watt

Total Harmonic Distortion
< 0.03 % at full power; < 0.01 % typical levels

IM Distortion
< 0.03 %

TIM
Unmeasureable

Dynamic Headroom
> 1.5 dB

Interchannel Crosstalk
> 80 dB at 1 kHz
> 60 dB at 20 kHz

Input Impedance
33 kΩ

Input Sensitivity
1 V for 28.28 V 1.2 V for full output

S/N Ratio
> 115 dB, full power, IHF A-weighted

Damping Factor
> 800 at 20 Hz

Dimensions
17" wide x 5 1/4" high x 16" deep (6" high with feet)

Power Requirements
110 Vac-120 Vac 750 Watts

Net Weight
41 lb

PARASOUND

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